**Unit Plan Guidelines**

I. **Subject Area:**English, Math, Physics, US History

**Grade level:** 10th -12th

**Unit Title:** Six Flags Great Adventure

II. **Estimated Time:** 10 class periods total (2 weeks)

III. **Student Population:** 28 students; 16 girls and 12 boys; heterogeneous population; 2 ELL students

Stage 1 – Desired Results

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| **IV. Standards:**  **Language Arts:** 1.1.11G, 1.2.11A, 1.3.11B, 1.5.11B  **Math**: M11.A.2.1.3, M11.E.2  **Physics:** 3.2.12.B6, 3.2.12.B7  **US History:** 8.1.U.A-C, 8.3.U.A,C,&D   1. **Understanding(s):**   **Language Arts:** Students will be able to identify the primary languages spoken in Latin America. Students will analyze the variety of languages spoken by Latinos in the United States. Students will be able to identify many of the diverse styles of Latin music.    **Math:** This unit is designed so that students will see the connections between what they learn in the classroom and what they see in the real world. They will understand why the normal distribution model is a useful model in statistics and probability.  At the end of this unit, students will apply the normal distribution model to data representing heights in the general population.  **Physics:** Students will get to experience real world applications of physics at relatively extreme levels. They will measure and calculate velocities and accelerations different types of roller coasters and determine what effect these values have on material choice for roller coaster construction.  **US History:** Students will be able to identify different aspects of 19th century American frontier life. Students will research and create their own fictional models of frontier life. They will make video diaries of their fictional models for in-class presentations. They will list comparisons and contrasts between frontier life and current American life.    **VI. Essential Question(s):**  **Language Arts:** The issue of language is related to the issue of assimilation. What are some of the controversies and questions that arise when people think about the languages spoken by Latinos in the U.S.? Why is it important to critically examine assumptions about the languages spoken by groups of people? How is music an expression of identity and culture? What is the relationship between music and other forms of cultural expression and the immigrant experience?  **Math:** *How can the normal distribution model be used to represent real life situation?*  *Can the frequency table be transform into a normal distribution curve?*  **Physics:** Do wooden roller coasters perform differently than steel? What role does desired roller coaster performance play in material design choice?  **US History:**  In what ways does frontier life/hardships compares to current American life? How does the lifestyle and historical significance of frontier families affect us today?  **VII. Attitude(s) and Value(s):**  **Language Arts:** Students will think about the importance of languages for Latino communities including new immigrants and established communities. Students will be able to identify the importance of music as an expression of identity for Latinos and in all cultures.  ***Math****: Students will better appreciate their learning of statistics and probability and math in general. The students will improve their communication skills and understand the importance of working cooperating and collaborative.*  **Physics:** Students will understand the physics behind the thrills, and the differences between some of the biggest and fastest steel and wooden roller coasters in the world.  **US History:** Students will understand the hardships and circumstances surrounding 19th century frontier life. Students will identify ways in which their culture/lifestyle compares with past cultures to better understanding and appreciate their own culture.  **VIII. Skill(s):**  **Language Arts:** Compare similarities and differences within the Latino culture; identify the issues of immigration and assimilation; distinguish stereotypes and factual statements concerning the Latino culture; draw conclusions and make generalizations  Math: *Students will develop a knack for gathering pertinent information and making appropriate observations to gather data for making predictions. Students will know how to create frequency table and organize data for presentation. Students will use the normal distribution model as a statistical tool for drawing conclusions and making predictions of real –life situations.*  *Students will use power point to present their findings to the class. Students will also use the excel spreadsheet to organize their data and will use a normal distribution software that will model the normal distribution curve from the data on heights collected on their field trip to Six flags.*  *Students will develop social and communication skills as most of the work will involve working in groups of as teams. Students will learn to work cooperatively and collaboratively. Students will also learn organizational skills as a result of completing this lesson.*  **Physics:** Students will gain a superior understanding of the physics behind thrill rides at a theme park. They will make observations, take measurements, and use energy and motion formulas to calculate several key physics concepts. They will get to experience the physical forces of these concepts first hand to gain a better appreciation of what these concepts entail in real world situations. Students will evaluate two types of roller coasters and understand why material choice and technology play a significant role in the performance and therefore thrill of major rides at a modern amusement park.  **US History:** Students will identify aspects of 19th century frontier culture. They will use historical information to recreate a fictitious, yet historically based family. The students will organize their thoughts to write a detailed essay accounting situations, hardships, and circumstances surrounding their historical examples. The students will creatively use technological devices such as digital cameras or camcorders to recreate their essays/accounts for their in-class presentations. The students will experience further aspects and gain more of an understanding of historical frontier life in the Frontier Adventures section of the amusement park. |

Stage 2 – Assessment Evidence

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| **IX. Performance Task(s):**  **Language Arts:**  Students will think about the importance of languages for Latino communities including new immigrants and established communities.  Students will be able to identify the importance of music as an expression of identity for Latinos and in all cultures.  **Math:** *Students will demonstrate creating a frequency table and will transform the frequency table into a normal distribution curve.*  *Students will make inference and prediction based on the distribution model they created.*  **Physics:** Students will measure, calculate and compare physical forces on several world class amusement park rides. They will use these figures to make determinations about ride construction.  **US History:** Students will identify different aspects of 19th century frontier life and formulate a fictional family on a worksheet.  They will demonstrate their understanding of frontier life by creating essays about their characters.  Students will evaluate their experiences of frontier life with their contemporary lifestyle. | **Other Evidence:**  **Students will answer the following Framing Questions:**  What languages are spoken in Latin America? What languages and dialects are spoken by Latinos in the United States?  What is Latin music? What kinds of music make up this broad genre?  *Group presentation of findings to the class by using power point.*  *Students will keep a journal for the duration of the unit. In the journal. Student will recall daily what they learn during the day and what are the challenges they encountered during the day.*  What are the differences in measured and calculated forces on these roller coasters?  Does construction material and technology play a role in desired and actual performance of the rides?  What was life like for 19th century Americans in the frontier?  What did you learn from your creation of a fictional family/lifestyle? What experiences/hardships do you think your fictional characters would endure in 19th century America?  In what ways does frontier life differ/compare to your own lifestyle? |

Stage 3 – Learning Plan

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| **X. Learning Activities**  **Language Arts: Lesson #1**  **Objectives:**  1. Upon completion students will be able to recognize the elements of a short story.  2. Students will be able to better develop their functional writing skills.  3. Students will be able to display experience writing creatively in the medium of the short story.  4. Students will be able to use vocabulary in their writing that demonstrates an understanding of the meaning.  **Description:**  After watching the Six Flags Great Adventure virtual field trip, the students will write their own adventure story using vocabulary that was evoked while watching the trip. The story must follow the guidelines specified on the short story guidelines sheet. The students must also adhere to the assignment requirements in that they used what they’ve learned about culture and expression and translate that into a fictional adventure.  **Materials:**  Adventure Assignment Sheet  Short Story Elements Sheet  Six Flags Great Adventure Virtual Trip PowerPoint  Paper  **Math: Lesson # 2**  **Objectives;**   1. Students will create frequency tables from data gathered at Six flags. 2. Students use the normal distribution model to represent real-life situations. 3. Students will connect concepts to realities.   Descriptions:   * *The class will visit six flags for two hours. Student will be divided into five groups with five students in a group. Each group will be provided with a digital camera. Each group will take pictures of visitors to six flags. A total of 100 pictures will be taken with each group taking five pictures.* * *At School, students will work with the photography department to develop the pictures. Each group will take its twenty photos and distributer them to group members to five photos per member. Students will convert the heights of visitors on the photos to actual heights by using a conversion factor.* * *Students will use all 100 heights and create a frequency table. A normal distribution software will be used to see if the heights model a normal distribution,* * *Students will then use power point to present their findings to the class.*   Materials:  Digital cameras, graph papers, normal distribution software, computers, calculators.  **Physics: Lesson #3**  **Objectives**   1. Students will make measurements of roller coasters’ velocities and accelerations while at the park. 2. Students will use those measurements to calculate the physical forces of the roller coasters. 3. Students will take the information calculated to determine what role technology and building materials plays in performance of the roller coasters.   **Materials:**  Six Flags Physics Day Handbook  Acceleration Meter  Angle Meter/ Acceleration Card  Stopwatch  **US History: Lesson #4**  **Objectives**   1. The student will complete a frontier family worksheet creating a perfect fictional family, livelihood, and characters including personality, hobbies, skills, etc. 2. The student will write three essays describing the lives, situations, and circumstances surrounding 1-3 of their frontier family members in the 1880s. 3. The student will make a video diary from two of their essays to present in class.   **Description**   1. After studying the section on 19th century frontier life, students will fill out a Frontier House worksheet using in-class information, text, and online sources to give a historical grounding. By finishing this worksheet, each student will have created a fictitious, 19th century American frontier family. 2. At home, the students will write three essays (3 paragraphs a piece) about 1-3 specific members of their fictional frontier family with specific, historically grounded accounts of their existence, hardships, and experiences. 3. Outside of class, each student will create a video diary using a camera/camcorder describing or illustrating their three essays. Students can read, dress up, role play, or recreate their essays however they want, but need to retain historical accuracy in their presentations. Each video diary should be 3-5mins in length. 4. Each student will share a video diary in class as the final presentation of their frontier family activity. 5. They will fill out a Frontier Comparison Evaluation worksheet which allows the students to compare/contrast different aspects of frontier life to their current livelihood.   **Materials:**  Frontier House Worksheets  Digital Camera/Camcorder  Digital Projector  Frontier Comparison Evaluation worksheet |

**XI. References:**

Most Widely Spoken Native Languages in Latin America

http://commons.wikimedia.org/wiki/File:Map-

Most\_Widely\_Spoken\_Native\_Languages\_in\_Latin\_America.png

Latin Languages in the Americas

http://commons.wikimedia.org/wiki/File:Latin\_languages\_in\_the\_Americas.png

BBC Article: “Hispanics in the US: A new generation”

<http://www.bbc.co.uk/news/10209213>

Articles about Spanglish from PBS website for the series “From Sea to Shining Sea”

http://www.pbs.org/speak/seatosea/americanvarieties/spanglish/

http://www.pbs.org/speak/seatosea/americanvarieties/spanglish/book/

YouTube video showing a glimpse into efforts to preserve indigenous languages in

Mexico

<http://www.youtube.com/watch?v=9Eiv-pnRVr4>

Prentice Hall, Precalculus, Graphing and Data Analysis, 2001

Gary Smith, Third Edition, Statistical Reasoning.

**Six Flags Physics Day Handbook**

<http://www.sixflags.com/greatAdventure/assets/pdf/2010PhysicsWorbook.pdf>

Frontier House

<http://www.pbs.org/wnet/frontierhouse/index.html>

Frontier activity worksheets

<http://www.pbs.org/wnet/frontierhouse/resources/pdf/4biographysheet.pdf>

**XII. Reflection:**

**Language Arts:**

This lesson focuses on applying music, expression, and cultural content to language learning and writing. Writing a short story with a fresh appreciation for the world and its’ diversity and asking the students to apply the ideas to their personal lives engages the students. This lesson has elements of my teaching principles. I believe that teachers should use a variety of methods to enhance creativity in the students. In further lessons, students will apply what they’ve learned about culture and write a short essay about where they would choose to visit or live, and why. This relates to my principle that students should connect content to real life situations inside and outside of the classroom.

**Math:**

*Students had some serious fun at the Six Flags Adventure Theme Park. In addition to taking pictures for the lesson activity, some students went on the roller coasters. One could sense and feel the joy in student’s eyes. An exercise which students find painstaking and cumbersome was converting the heights from the photos to real heights by using a ruler and a calculator. There were personal stories shared between students to and from the park. I sensed an air of belongings and togetherness. Students worked peacefully together and learned from one another. The activity enabled students to see the connections between what they learned in the classroom and what they see in real life. Students realized that the time spent in the classroom was not a wasted time.*

**Physics:**

Students are finally able to experience thrilling real world examples of physics at work. This lesson allows a subject that some students view as math heavy, abstract, and even uninteresting and makes it exciting. The relative power of physical concepts described in textbooks comes alive and gets the students’ blood pumping, making for memories and experiences not soon forgotten. The critical thinking after the calculations will be tied to the memories of the theme park itself and remain with students long after.

**US History:**

Students were able to put feet to their study and research by creating their own examples of frontier life. This lesson allowed them to take historical facts and accounts and make them their own. They used a lot of creativity in their family histories and essays to show their understanding of the in-class material and their own research. This activity enabled the students to make connections between past Americans, their society, culture, and lifestyle with their own experiences and culture. They had fun making creative recreations of their frontier families through the video diaries, and their classmates enjoyed seeing the hard work and energy pay off in the final presentations. Additionally, the students were able to see further aspects of frontier life, dress up in period costumes, taste the cultural cuisine while enjoying their day at Six Flags Great Adventure.